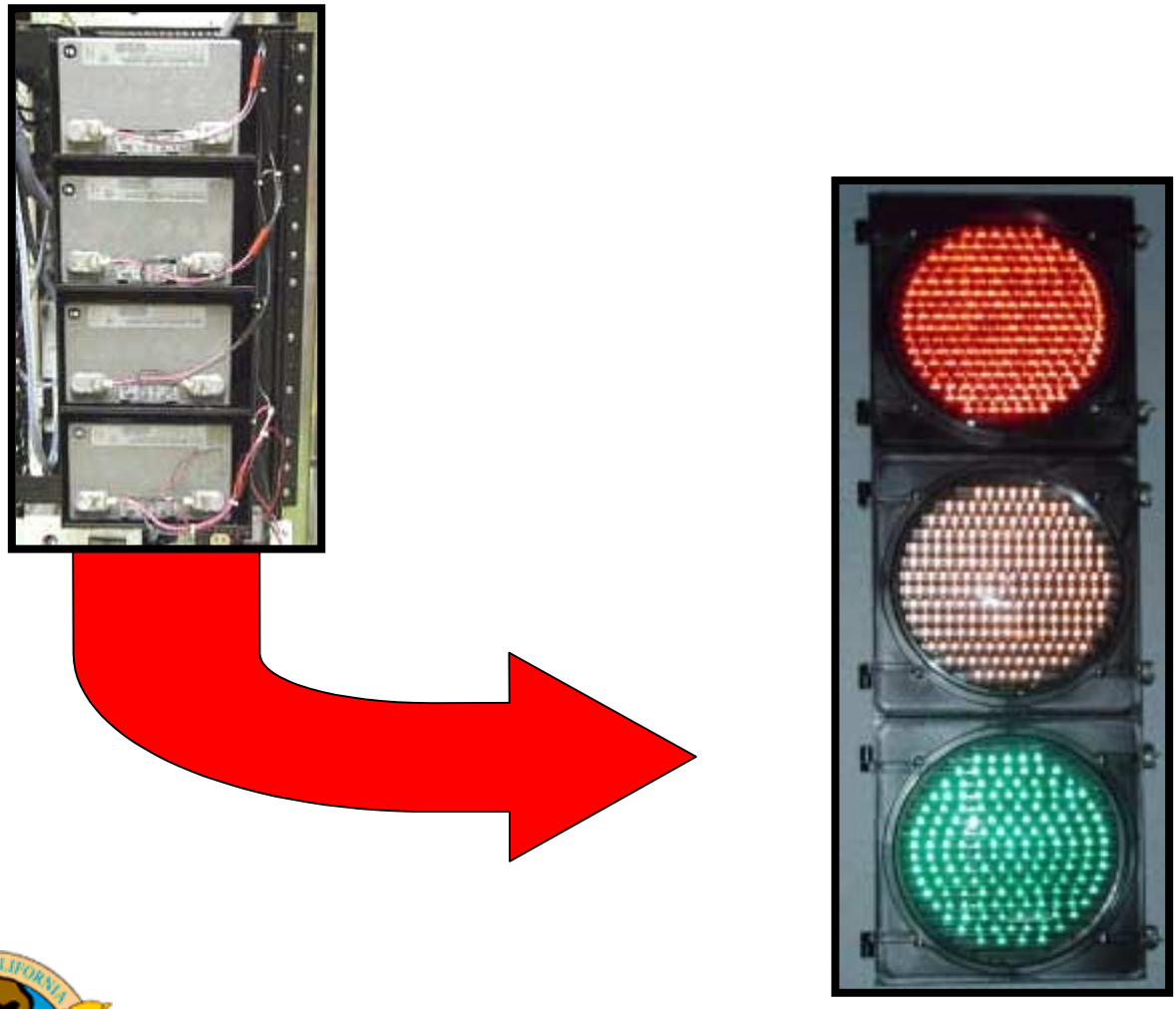
Grant Application Instructions

Battery Backup Program for Light Emitting Diode Traffic Signals

Deadline Extended to 12/9/02 at 4 p.m.



CALIFORNIA ENERGY COMMISSION

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Grant Application for the (Second Solicitation)
Battery Backup Program for Light Emitting Diode Traffic Signals
Amended October 29, 2002

1. Program Summary

This program will provide grants for existing and new battery backup systems (BBS) installed at existing intersections with light emitting diodes (LEDs). Future or new intersections are not eligible. The grant will pay for part of the material costs for the BBS and cabinet. Eligible BBS systems are those installed between January 1, 2001 through September 28, 2001 and new installations that have **not** occurred. The grant will not pay for the labor associated with installing the BBS.

2. Funding

This is the second solicitation. As a result of the first initial solicitation, the commission awarded grants to 125 local governments on August 7, 2002. Up to $4,000,000 is available for grants under this solicitation. Of this amount, up to $560,000 is available for existing BBS that occurred between January 1, 2001 through September 28, 2001; and, $3,440,000 million is available for new BBS that will be installed after the Commission approves grant applications. There is no minimum grant amount.

There are two groups of funding, one for existing installations and the other for new installations. The total grant funds available for each group is shown in Table A.

Table A – Battery Backup System Incentive Amounts

Type of Installation	Total Grant Funds Available	Maximum Grant per Local Government*
Existing BBS installations that occurred between January 1, 2001 and September 28, 2001	Up to $560,000	$56,000
New BBS Installations that will occur after Commission grant approval	Up to $3,440,000 million	$344,000

* The maximum grant per local government for each type of installation is shown in Table A. The Commission reserves the right to exceed these maximums if there are funds remaining after all the high priority intersections have been funded (See Section 9).

3. Definitions

Definitions for terms used in this application are found in Appendix A.

4. Eligible Applicants

The entity requesting funds must be a local government.

5. Eligible Projects

To be eligible for funding, projects must meet the following requirements:

- For existing BBS, the installations must have occurred between January 1, 2001 and September 28, 2001.
- For new BBS, the installations must **not** have occurred and installation shall not occur prior to approval of a grant agreement.
- The BBS must control LEDs. Intersections must have at least the red traffic modules as LEDs.
- The BBS shall be used to operate an intersection in the red flash mode or in the fully functioning intersection mode.
- The BBS and cabinet must meet the Energy Commission Specifications indicated in Appendix B.

6. Ineligible Projects

The following projects are ineligible for funding:

- BBS installations that occurred prior to January 1, 2001.
- BBS installations that were installed since September 28, 2001 and prior to Commission approval of the project.
- BBS installations controlling all incandescent traffic signalized intersections.
- BBS installations for future traffic signal intersections.
- The purchase of extra or spare BBS for future replacement or installation.
- BBS installations at intersections that are awaiting LED traffic signal conversions.

7. Application Process

Applicants must submit a **complete application package** to the Energy Commission. A complete application package for the existing BBS installations and the new BBS installations are described as follows:

Existing BBS Installations – Application Package 1

ALL APPLICANTS MUST SUBMIT THE FOLLOWING
• **Original signed application** form (submit one original and one copy)
• **Exhibits A and B**: Electronic copy and hard copy of Exhibits A and B. The electronic copy must be e-mailed or submitted on a CD or floppy disk and must be compatible with Microsoft Excel, 1997. **As long as a hard copy is received by due date.**
• **Exhibit C**: Work statement and schedule for project/grant completion
• **Exhibit D**: Governing body resolution, order, motion, or ordinance. The resolution may be submitted at a later date but must be received prior to any grant funds being disbursed. The resolution must contain the title of the official that can execute the grant agreement on behalf of the local government.
• A copy of the **vendor/contractor invoice** showing the unit cost of the BBS, the total cost and the make and model number of the BBS
• A copy of the **specification submittal** containing the information in Appendix B
• A copy of the **external battery cabinet specification** submittal, if applicable.
• **Certification of installation date** between 01/01/01 to 09/28/01

New BBS Installations – Application Package 2

ALL APPLICANTS MUST SUBMIT THE FOLLOWING
• **Original signed application** form (submit one original and one copy) • **Exhibits A and B**: Electronic copy and hard copy of Exhibits A and B. The electronic copy can be e-mailed or submitted on a CD or floppy disk and must be compatible with Microsoft Excel, 1997. **As long as a hard copy is received by due date** • **Exhibit C**: Work statement and schedule for project/grant completion • **Exhibit D**: Governing body resolution, order, motion, or ordinance. The resolution may be submitted at a later date but must be received prior to any grant funds being disbursed. The resolution should contain the title of the official that can execute the grant agreement on behalf of the local government. • A copy of the **BBS specification** to be used, if known. • A copy of the **external battery cabinet specification**, if applicable and known.

Local governments can apply for both existing and new BBS projects. Submit complete application package(s) to:

California Energy Commission
Grants and Loans Office
1516 Ninth Street, MS-1
Sacramento, CA 95814-5512
Attention: BBS Program

For information or questions call David Rubens at (916) 651-9857. E-mail Exhibits A and B to *drubens@energy.state.ca.us*.

8. Application Deadline

Complete application package(s) must be received **by 4:00 PM on December 2, 2002**, to be considered in this round of funding. A complete application package contains all the items indicated in Section 7, including an **original signed application**. The Commission may issue another solicitation if there are any excess funds remaining after funding all high priority intersections in the initial round.

9. Evaluation Criteria

Projects will be initially screened for eligibility, technical accuracy, and completeness of application as indicated in Section 7. If the application is incomplete or is not technically accurate, additional information will be requested in writing. The requested information must be received within a specified time or the application will be rejected. The date the Energy Commission determines that an application is complete will be the official completion date used to rank intersections if:

a) There are more request for funds than there are funds available; or
b) There are more funds available after the high priority intersections have been funded and the maximum grant per local government have been reached as identified in Table A.

Example: There are three cities with high priority intersections. However, there is only $4,000 remaining. The city with the earliest complete application date will get the funding.

After meeting the eligibility, technical accuracy, and completeness requirements, the application will be evaluated according to the criteria in Table B. Table B also explains how each criterion will be used in evaluating each intersection.

Table B
Evaluation Criteria and Points

Intersection Criterion	Key Element	How evaluated?	Maximum Points
Traffic volume	• Maximum traffic volume over a 24 hour period • Only intersections will be used for traffic volume calculations	The number of vehicles traveling through each intersection over a 24 hour period would be evaluated as follows: • Less than 2,500 = 0 • 2,501 to 10,000 = 2 points • 10,001 to 20,000 = 3 points • 20,001 to 30,000 = 4 points • Greater than 30,001 vehicles = 5 points	5 points
Injury Accidents	• Intersections with more than one injury accident per million vehicles per intersection per year	• Intersections meeting this criterion = 1 point • Intersection not meeting this criterion = 0 points	1 point
Children	• Intersections within a one mile radius of a K-12 school	• Intersections meeting this criterion = 1 point • Intersection not meeting this criterion = 0 points	1 point
Speed of Approach Traffic	• Approach traffic speed of 45 miles per hour or greater for **each** cross street	• Intersections meeting this criterion = 1 point • Intersection not meeting this criterion = 0 points	1 point
Pre-emption	• Intersections equipped with audible sound, accessible signals or pre-emption controls	• Intersections meeting this requirement = 1 point • Intersection not meeting this criterion = 0 points	1 point
MAXIMUM POINTS AVAILABLE			**9 POINTS**

The following is an explanation of each criterion and the key elements to be evaluated for each intersection:

a) **Traffic volume per intersection over a twenty-four hour period**. Traffic volume will be based on the most recent historical of the Statewide Integrated Traffic Records System (SWITRS). The traffic volume shall be based on maximum volume recorded in 2000, 2001, or 2002. The documentation of traffic volume need not be submitted with the application but it must be made available upon request. Intersections will be awarded points as follows:

- Less than 2,500 vehicles per day will get 0 (zero) points
- 2501 vehicles to 10,000 vehicles per day will get 2 points
- 10,000 vehicles to 20,000 vehicles per day will get 3 points
- 20,001 vehicles to 30,000 vehicles per day will get 4 points
- Greater than 30,001 vehicles per day will get 5 points

b) **Intersection has more than one injury accident per million vehicles per year.** The number of injury accidents will be based on data from the Statewide Integrated Traffic Records System (SWITRS). The traffic volume will be based on historical or other documented data for 2000, 2001 or 2002. The documentation of injury accidents need not be submitted with the application but it must be made available upon request. An intersection having more than one accident per million vehicles per year will get one point. Intersections not meeting this criterion will get zero points.

c) **Intersection has approach speeds greater than or equal to 45 miles per hour on each cross street**. The approach speed is the posted speed limit for that street. All streets crossing the intersection must have an approach speed greater than or equal to 45 miles per hour in order to get one point for this criterion. Local governments will self-certify the speed of all cross streets at the intersection. Intersections not meeting this criterion will get zero points.

d) **Intersection is within one mile of a K-12 school**. Local governments will self-certify the distance of an intersection from the school. Any intersection within one mile of an elementary, middle and/or high school will get one point. Intersections not meeting this criterion will get zero points.

e) **Intersection has audible sound controls for handicapped persons, accessible signals, or pre-emption for emergency response vehicles, transit, or others**. Local governments will self-certify that the intersections have audible sound controls, accessible signals, or other pre-emption controls. Any intersection meeting this criterion will get one point. Intersections not meeting this criterion will get zero points.

10. Determining High Priority Intersections

High priority intersections will be determined based on the assigned points indicated in Table B. The following are the priority levels:

- **Priority One** intersections are those with at least 7 of the criteria points in Table B
- **Priority Two** intersections are those with at least 6 of the criteria points in Table B
- **Priority Three** intersections are those with at least 5 of the criteria points in Table B
- **Priority Four** intersections are those with at least 4 of the criteria points in Table B

Grant funds will be allocated initially to all priority one intersections up to the funding limits indicated in Section 2, Table A. If funds still remain after consideration of the

priority one intersections, consideration will then be given to the priority two intersection, to the priority three intersections, and lastly to the priority four intersections. If a local government has reached the maximum grant limit for its priority one intersections, it will only be considered for additional funding for their priority intersections if funds remain after consideration of priority two, three, and four intersections for local governments that have not met the maximum amount in Table A. If, at any time, there are insufficient funds to award all applications in any given priority level, then those applications with the earliest "completion" date will receive priority.

If funds still remain after funding the priority one, priority two, priority three, and priority four intersections at the maximum levels indicated in Table A, the remaining funds will be disbursed to all the remaining priority one intersections based on the earliest date the application was deemed complete by the Commission (see Section 9). If funds still remain after funding all the priority one intersections, the local governments with priority two intersections will be funded based on the date the application was deemed complete by the Commission. If funds still remain after funding all of the priority two intersections, then the priority three intersections will be funded based on the date the application was deemed complete by the Commission. Finally if funds remain after funding all priority one, two, and three intersections, then priority four intersections will be funded.

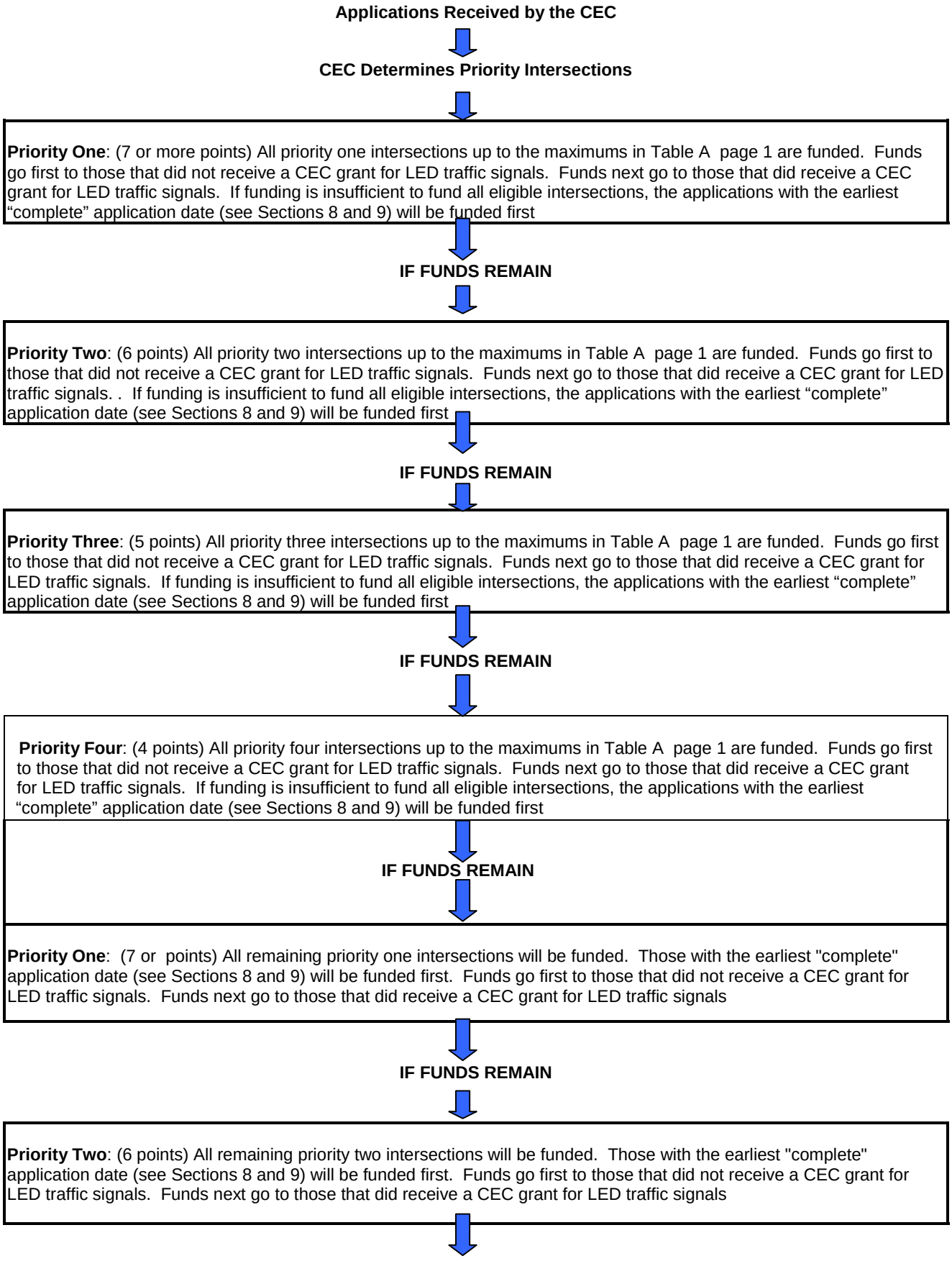
The Commission will give priority to local governments that did not receive a grant from the state for the installation of LED traffic control signals. These grants were awarded in 2000-2002 as part of the Commission's Peak Load Reduction Program (AB 970). The Commission will identify those local governments that previously received an LED grant.

Figure A shows the funding priorities.

11. Prioritizing Intersections

Exhibit A lists your local governments intersections for which grant funding is requested. When Exhibit A is completed electronically, it will automatically determine which intersections are priority one, two, three, or four based on the criteria discussed in Section 9. The priority one intersections listed in Exhibit A will be funded first up to the limits indicated in Section 2. If there is funding available only for a limited number of priority one intersections, your prioritization of intersections in Exhibit B will be used to identify the intersections to receive funding.

Figure A - Funding Priorities



IF FUNDS REMAIN

Priority Three: (5 points) All remaining priority three intersections will be funded. Those with the earliest "complete" application date (see Sections 8 and 9) will be funded first. Funds go first to those that did not receive a CEC grant for LED traffic signals. Funds next go to those that did receive a CEC grant for LED traffic signals

IF FUNDS REMAIN THEN

Priority Four: (4 points) All remaining priority four intersections will be funded. Those with the earliest "complete" application date (see Sections 8 and 9) will be funded first. Funds go first to those that did not receive a CEC grant for LED traffic signals. Funds next go to those that did receive a CEC grant for LED traffic signals

IF FUNDS REMAIN THEN A NEW SOLICITATION

12. Calculating the Incentive Factor

The maximum material cost for calculating the incentive is $3,500 for a BBS that operates only in the red flash mode and $4,000 for a BBS that operates in the fully functioning mode for all lights. The following table shows the Incentive Factor for existing and new BBS installations:

BBS Operation	Maximum Allowable Material Cost Basis	Existing BBS (Incentive Factor)	New BBS (Incentive Factor)
Red Flash	$3,500	0.30	0.70
Fully Functioning	$4,000	0.30	0.70

13. Calculating LED Adjustment Factor

The law establishing the BBS grant program requires that the BBS be used to operate LED traffic signals. The Commission will reduce the grant amount when the BBS will operate an intersection in the fully functional mode but the intersection does not have all LED lights. The amount of the reduction will be known as the LED adjustment factor and will be as follows:

LED Lamp Type	BBS Operation	LED Adjustment Factor
Red, green, amber and pedestrian hand and walking person	Fully Functional	1 multiplier
Red, green, and pedestrian hand and walking person	Fully Functional	0.95 multiplier
Red, green and amber	Fully Functional	0.95 multiplier
Red, green and pedestrian hand	Fully Functional	0.90 multiplier
Red and green	Fully Functional	0.80 multiplier
Any LED combination that includes at least Red LEDs	Red Flash	1 multiplier

The formula for calculating the incentive amount will be as follows:

> Incentive = BBS material cost (Actual cost or maximum allowed, whichever is less) x Incentive Factor (Section 12) x LED Adjustment Factor

Examples:
1) Fully Functional – New Installation with all LEDs except amber:
Maximum allowable cost basis for BBS: $4,000; Estimated BBS material cost = $4,000
Incentive = $4,000 x 0.70 x 0.95 = $2,660

2) Fully Functional – Existing installation with all LEDs except amber
Maximum allowable cost basis for BBS: $4,000; Actual BBS material cost = $5,000
Incentive = $4,000 x 0.30 x 0.95 = $1,140

3) Red Flash – New Installation with red LEDs
Maximum allowable cost basis for BBS: $3,500; Estimated BBS material cost = $3,000
Incentive = $3,000 x 0.70 x 1 = $2,100

4) Red Flash – Existing installation with red LEDs
Maximum allowable cost basis for BBS: $3,500; Actual BBS material cost = $4,000
Incentive = $3,500 x 0.30 x 1 = $1,050

14. Approval of Awards

Each applicant will be notified of the results of the Commission's evaluation and grant award. The Commission must approve all awards. Funding awards shall be deemed approved by the Commission after approval at a business meeting.

Upon approval by the Commission, a grant agreement will be generated. The grant agreement will contain work statement tasks and schedules based on the information provided in Exhibit B. Failure to meet any work statement tasks within the schedule indicated in the grant agreement may result in cancellation of the award by the Commission as indicated in the Grant Terms and Conditions.

It is anticipated that grant awards will be made starting in April.

15. Award Payments and Invoicing

The Commission will provide grants to supplement the cost of purchasing the BBS as described in Section 2. The Commission will provide progress payments for BBS that have been installed and are operational. Prior to payment, the Commission reserves the right to:

a) Inspect each project—including pre- and post-inspection, as applicable.

b) Verify that all the projects have been installed and are operational.

c) Verify that the BBS installed matches the specifications and type for which payment is requested.

d) Grant payments shall be made for eligible projects as defined in Section 5 and Appendix B. To receive a grant payment, the recipient must submit the required documentation as described in the grant agreement. This documentation will include, at a minimum, copies of vendor/contractor invoices showing the specific quantity and unit cost for the BBS purchased and an updated list identifying the

intersections where the BBS was installed. Any labor associated with installation must be deducted from the invoiced amount.

16. Situations for Denial of Grant Payment Request

Grant payments, either in whole or in part, will not be made in the event of any of the following:

a) The equipment purchased does not meet the requirements specified in Section 5 and Appendix B.

b) The recipient fails to provide the required documentation specified in the grant agreement for receiving payment.

c) The recipient shall not be reimbursed for any labor used to complete the BBS project installation. This grant is for the BBS equipment as defined in Appendix A.

d) A random audit or technical analysis conducted by the Commission, or its designated representatives, determines that the installed project does not meet the terms and conditions of the grant agreement.

17. Reports and Documentation

The recipient will be required to submit a final report. A progress report may be required. The frequency of submittal of the progress reports will be specified in the grant agreement.

18. Special Conditions

The Commission will monitor the progress of the BBS installation and reserves the right to randomly audit funding awards and review any intersection documentation indicated in Section 9. The Commission may demand that certain intersections are tested in the presence of Commission staff, or its designated representatives, and if so, the recipient must agree to give the Commission access to the intersections.

19. Cancellation of Solicitation

The Commission reserves the right to do any of the following:

- Cancel this solicitation:
- Amend or revise this Solicitation as needed; or
- Reject any or all proposals received in response to this Solicitation.

Appendix A
Definitions

a. **Battery Backup System** (BBS) means a unit that shall be capable of producing—simultaneously—fully regenerated conditioned and true sine wave, standby and continuous AC output. It shall consist of three major components, the electronic module, the power interface, and the battery system.

b. **Cabinet** means an outdoor (NEMA 3R) enclosure for the BBS. The cabinet shall have a door opening to the entire cabinet and enclosed bottom with insect proof weep-hole. The door shall be attached to the cabinet through the use of a continuous steel piano hinge. The door shall use a padlock clasp in order to lock the door. The weatherproof enclosure shall be 12" wide x 9" deep x 36" – 54" high (taller if BBS controls are installed with the batteries in the external cabinet).

c. **City** means an incorporated municipality in the State of California.

d. **Commission** means the California Energy Commission, also known as Energy Commission.

e. **County** means a geographic area with distinctive boundaries that has incorporated and/or unincorporated municipalities within these boundaries.

f. **City & County** means county and city have the same boundaries.

g. **Existing BBS Installation** means the BBS was installed between January 1, 2001 and September 28, 2001.

h. **Fully functional mode** means traffic lights equipped with a BBS that will fully operate the red, green, and yellow traffic lights during a power failure.

i. **High priority intersections** means an intersection that has most of the following attributes: high traffic volume, high number of accidents, near a school, high traffic speed of cross streets, has pre-emption or accessible signals, and has at least red light emitting diode traffic signals.

j. **Incentive** means the portion of the project cost that will be provided as a grant to the recipient for the BBS installations specified in the grant agreement.

k. **Injury Accident** means an accident at an intersection in which some one has been hurt and the accident has been reported to the California Highway Patrol.

l. **Light emitting diode (LED) traffic signal** means signals that contain light emitting diode modules rather than incandescent bulbs.

m. **LED Adjustment Factor** means a factor that is used to adjust the grant amount for a BBS operating in the fully functioning traffic signal mode due to the presence of incandescent traffic signals.

n. **Local government** means a city, county or a city & county.

o. **Material Cost** means the cost of the BBS and cabinet, if applicable, and sales tax. It does not include any installation/labor cost.

p. **New BBS installation** means the BBS installation will not occur until after Commission approval of the project.

q. **Recipient** means the city, county or city and county that is awarded the grant and is responsible for meeting the grant terms and conditions.

r. **Red flash** means an intersection that is equipped with a BBS that will operate the red LED traffic lights in flash mode when there is a power failure.

s. **Traffic signal** means any lights operating on a designated electric utility traffic control rate schedule or those that are electrically powered and are associated with directing traffic flow. For the purposes of the BBS grant, traffic signals are those associated with street intersections only.

Appendix B

A. Battery Backup Systems Specifications for Existing Installations (Installations between January 1, 2001 to September 28, 2001)

1) A system for a fully functional BBS shall operate the entire LED-only intersection (700W/1000VA active output capacity, with 80% minimum inverter efficiency) for a period of at least two hours and run an additional two hours on Red Flash only.

2) Batteries systems will back up an intersection for a minimum of four hours and then be fully recharged and prepared for another two hours of operation within twenty-four hours.

3) Batteries shall be certified (by the manufacturer) to operate normally in harsh conditions -25 degrees c to +74 degrees c and 20% to 95% humidity.

4) Battery output voltage shall be 110 VAC and 125 VAC, pure sine wave output, $\leq$3% THD, 60Hz $\pm$ 5Hz.

5) BBS shall bypass the utility line power whenever the utility line voltage is outside the following voltage range: 100 VAC to 130 VAC ($\pm$ 2 VAC).

6) BBS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service.

7) Batteries shall be warranted for a full replacement for two (2) years from the date of purchase .

8) Batteries stored in an external cabinet may be attached to the controller or a stand-alone, pad-mount, outdoor (NEMA 3R) enclosure shall be available should there be inadequate room in the signal cabinet or should the consulting/traffic engineer prefer independent, external mounting. The external battery cabinet shall have a door opening to the entire cabinet and enclosed bottom with insect proof weep-hole. The door shall be attached to the cabinet through the use of a continuous steel piano hinge. The door shall use a padlock clasp in order to lock the door. The weatherproof enclosure shall be 12” wide x 9” deep x 36” – 54” high (taller if UPS controls are installed with the batteries in the external cabinet).

B. Battery Backup Systems Specifications for New Installations (Not yet installed)

1) A system for a fully functional BBS shall operate the entire LED-only intersection (700W/1000VA active output capacity, with 80% minimum inverter efficiency) for a period of at least two hours and run an additional two hours on Red Flash only.

2) Battery systems will back up an intersection for a minimum of four hours and then be fully recharged and prepared for another two hours of operation within twenty-four hours.

3) Maximum transfer time due power outage shall be 150 milliseconds.

4) Batteries shall be certified (by the manufacturer) to operate normally in harsh conditions -25 degrees c to +74 degrees c and 20% to 95% humidity.

5) Battery output voltage shall be 110 VAC and 125 VAC, pure sine wave output, $\leq$3% THD, 60Hz $\pm$ 5Hz.

6) BBS shall bypass the utility line power whenever the utility line voltage is outside the following voltage range: 100 VAC to 130 VAC ($\pm$ 2 VAC).

7) BBS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service.

8) Batteries shall be provided with appropriate interconnect wiring and corrosion-resistant mounting trays and/or brackets appropriate for the cabinet into which they will be installed.

9) Battery interconnect wiring shall be via modular harness. Batteries shall be shipped with positive and negative terminals pre-wired with red and black cabling that terminates into a typical power-pole style connector. Harness shall be equipped with mating power-pole style connectors for batteries and a single, insulated plug-in style connection to inverter/charger unit. Harness shall allow batteries to be quickly and easily connected in any order and shall be keyed and wired to insure proper polarity and circuit configuration. Battery terminals shall be covered and insulated so as to prevent accidental shorting.

10) Batteries shall be warranted for a full replacement for two (2) years from the date of purchase.

11) Batteries stored in an external cabinet may be attached to the controller or a stand-alone, pad-mount, outdoor (NEMA 3R) enclosure shall be available should there be inadequate room in the signal cabinet or should the consulting/traffic engineer prefer independent, external mounting. The external battery cabinet shall have a

door opening to the entire cabinet and enclosed bottom with insect proof weep-hole. The door shall be attached to the cabinet through the use of a continuous steel piano hinge. The door shall use a padlock clasp in order to lock the door. The weatherproof enclosure shall be 12” wide x 9” deep x 36” – 54” high (taller if UPS controls are installed with the batteries in the external cabinet). Batteries shall be mounted on individual shelves. External battery cabinets that are mounted to the existing Control Cabinets shall be mounted with a minimum of eight bolts. External cabinets shall be ventilated through the use of louvered vents, filters, and thermostatically controlled fan (s).